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HEDGES FOR CANADIAN GARDENS

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HEDGES FOR CANADIAN GARDENS

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Cover illustration shows the hedge collection at the Central Experimental Farm, Ottawa.

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INTRODUCTION

Hedges have been made a special feature of the ornamental grounds on many of the experimental farms and research stations of Agriculture Canada since their inception. Until recent years, the collection of hedges at the Central Experimental Farm in Ottawa (Figure 1) was the largest on the continent. Since 1889 when the project was started, 169 species and varieties of trees and shrubs have been tested as hedges. At present there are 65 species in demonstration hedges, including several of the original planting, as well as several kilometres of hedges along roadways and farming enclosures. These latter are mainly formed of arborvitae (commonly known as cedar).



Figure 1 Hedges may be of many sizes and shapes.

There are also hedge collections on some 20 research stations from Charlottetown, P.E.I., to Sidney on Vancouver Island, B.C. These stations have supplied much of the information contained in this publication.

Brief reports on most of the material tried in these hedge collections are presented in tabular form at the end of the publication. Comments on the species of outstanding value are found in the section entitled "Notes on the best hedges."

THE PURPOSE AND USES OF HEDGES

Hedges should be to a garden what walls and partitions are to a house. They should mark the boundaries and provide privacy from without, act as a background to bright garden displays from within, give emphasis to the design of formal work, or separate one garden area from another where such a division is desirable. The purpose of a hedge is to form a barrier or division, and for this reason it should always end in a fixed object such as a building or a mass of planting. A hedge that ends in space loses its effect.

A boundary hedge around an attractive garden will provide a screen against an unattractive adjoining yard, or an untidy set of buildings, and give the owner privacy after a few years. From the inside, beds of roses, annuals, or perennial flowers are much more pleasing against a green background of clipped hedge, or an informal row of flowering shrubs, than against a fence. A hedge is very often the most suitable dividing line between the lawn and vegetable garden on small properties, or between the lawn and field areas in country places.

Hedges can be used to alter the apparent dimensions of a property. When planted on either side of a path or a lawn, hedges make the view seem longer and narrower because of the converging lines of perspective. On the other hand, a hedge that is planted across the line of vision makes the view seem shorter. Sometimes a hedge is needed at the front of a property to give privacy, or at least the semblance of it, but low hedges paralleling the street usually make the front lawn look smaller and box-like. This is an advantage with some styles of architecture but undesirable in many cases.

In the gardens of the Tudor and Georgian periods of architecture, very low clipped hedges were often used to outline flower beds or walks in formal gardens, thus giving more character to the design. These hedges, in somewhat different form, are being used with the flat horizontal buildings of modern times. The long low line of a clipped hedge seems to match this style of architecture excellently when used as approach or foundation planting. Often interest can be added by clipping the hedge in such a manner that curves or buttresses are formed where such a variation in line is needed to emphasize a particular point in the design of the building or garden (Figure 2).



Figure 2 Clipped hedges are suitable as accents for long, low buildings.

Often where a more informal effect is desired, a row of flowering shrubs may be used in similar positions for the same purposes. Since only occasional pruning is necessary, such plantings require less labor. Flowering hedges are particularly attractive during the short blooming period but they are wider and therefore require more room (Figure 3).



Figure 3 Flowering hedges are more informal.

SELECTION OF A HEDGE

The first decision to be made is whether an evergreen or deciduous hedge is preferable. Evergreen hedges stay green all winter and are therefore of value as a contrast to white snow. Unfortunately, they are more easily broken down by the weight of ice and snow than deciduous hedges, and they cannot be used satisfactorily along a path or drive that is plowed in winter, unless they are planted well back from it.

The height of the hedge at maturity is the next point to consider. A hedge that is planted to provide privacy must grow to at least 150–200 cm. A large garden needs a taller hedge than a small lot and can stand a hedge of coarse texture, that is, one with large leaves and heavy twigs. Large shiny leaves can be seen in more detail than small, dull ones and so appear nearer at hand. Bright green, golden, or grayish foliage makes a stronger impression than foliage that is a mid-green and so seems closer. Hedges with large, shiny, bright leaves surrounding a large area tend to make the area look smaller, while a hedge of fine texture and dull green foliage tends to make an area look larger.

Since the purpose of a tall or medium hedge is to give privacy or to act as a background, it should be dark or mid-green in color. A large mass of a bright color would make it overpowering. Low hedges used to give emphasis to the design of a formal garden may be of brighter shades of green, gold, gray, or purple.

In choosing a hedge, environment should be considered also. The amount of sun or shade, whether the site is dry or moist, whether the soil is clay or sand, and the number of dogs or children in the neighborhood will all influence the final selection. White pine makes a beautiful hedge on dry sandy soil but will not grow on wet clay, where larch or spruce would succeed. White pine is subject to a fungus disease called blister rust, whereas red pine is not. In shade, lilac will be spindly and covered with mildew, while in the same spot wayfaring tree would be very satisfactory. Siberian elm will not stand a low damp site, where a willow hedge would be excellent. Hawthorn provides fine thorny protection against dogs or children, but may tear clothes and cause trouble if planted near a public path. It is also subject to the attacks of insects and disease common to apples and so should not be used in an orchard district unless the owner is prepared to spray regularly. The nurseryman should be consulted as to the best plants to use for different conditions.

Rate of growth is also a factor. Good hedges can be grown only with patience and regular clipping, as will be described under "Trimming." Fast-growing plants, such as willows and Siberian elm, which will make a 150 cm hedge in 3 years if properly handled, require such frequent trimming that their rapidity of growth is a disadvantage in the long run. Plants that grow more slowly are much less trouble and will remain in good condition over a longer span of years.

PLANTING

Deciduous hedges should be planted early in the spring, before the leaf buds burst, or in October after the leaves have fallen. At Ottawa and in more northern districts higher mortality is experienced in fall than in spring planting. Evergreens may be planted either in early May or September, while the cedar, or arborvitae, may be moved at almost any time except midsummer if it is kept well watered.

In general, small plants should be used in preference to large ones. Deciduous plants 2 years old grown from seed, or cuttings that have been cut back at the end of the first season's growth to make them branch out near the ground, are excellent. Four-year-old evergreen seedlings that have not been cut back, or perhaps just lightly trimmed at the tips, are the best size to use. Larger plants may be used, provided they are bushy to the ground. Tall, spindly plants should never be used unless one is prepared to cut them down almost to ground level. This cannot be done with evergreens.

If the planting is done as a common project between two neighbors, it is best to have a hedge on the property line; if it is the property of only one owner it should be placed 75–100 cm inside the line so that it will not cause trouble. Most municipalities have by-laws governing planting on the front of a lot and it is wise to acquaint oneself with these before planting.

When the location has been decided upon, selection of planting material made, and arrangements completed for securing the plants, the soil should be prepared properly before planting. A trench 40–50 cm deep, and 50–60 cm wide, should be dug. Care should be taken to place the good topsoil on one side and the poorer subsoil on the other. A 5–10 cm layer of thoroughly rotted barnyard manure or leaf mold should be placed in the bottom of the trench and turned into the subsoil with a digging fork. This should be covered with 5–10 cm of the good topsoil before actual planting commences. Since it is important to have a hedge straight, a line should be strung about 15 cm to one side of where the actual line of the hedge will be.

Spacing

Single-row planting is much more satisfactory than the staggered double row sometimes advocated. The double row takes many more plants and more space, is harder to trim and, as there is more competition between roots, mortality is higher and replacement more difficult.

The planting distance will vary with the kind of plant and the ultimate height to which the hedge is to grow. Planting 50 cm apart has proved satisfactory for hedges that are to grow 100–200 cm in height. For low hedges, or where plants are of erect habit of growth, closer planting is necessary. Very upright plants such as pyramidal privet should be placed 15–20 cm apart. Where taller hedges are desired, particularly evergreens for screens or windbreaks, the planting distance should be increased to 75–100 cm.

Setting the plants

Plants should be set a little deeper than they grew formerly. In order to space the plants evenly, a light stick cut to the proper length should be placed between the plants as each is set in place. Each plant should be placed the same distance from the line so that the hedge will be straight. In planting, the roots of the plants should be spread out in a natural position and covered with topsoil. The plant should be gently shaken up and down so that the loose earth will work down around the roots before the soil is packed firm with the fingers or by tramping.

Care must be taken to prevent the fine roots from drying out during planting operations. It is wise to carry the plants in a pail with the roots covered with water or damp sphagnum moss, or to wrap them in a wet sack, placing one at a time in the trench as needed, rather than spreading them along the trench to save time. When the whole row has been planted, with the roots covered with topsoil and packed firmly, a hose should be used to soak the ground thoroughly. After the water has soaked away, the remainder of the earth should be filled in, leaving a ridge on each side to facilitate future watering.

TRIMMING

At the time of planting, deciduous trees and shrubs should be cut back to a point 5–10 cm above the base of the past season's growth. If a dense hedge is required with branches down to the ground, this should be repeated the following year. As conifers do not put out new growth from old wood, only the young tips can be cut back to promote bushiness. Conifers should never be cut back quite to the base of the current season's growth.

Trees or shrubs are trimmed or clipped when a smooth, dense surface of foliage is desired. Hedging shears or electric clippers are used to produce this even surface and the operation is distinct from the thinning-out or pruning of individual branches carried out in maintaining an informal hedge of flowering shrubs. Though various arrangements of stakes, lines, and frames have been tried to guide the operator, the chief requirements are patience, a steady hand, and a straight eye.

Any hedge should be trimmed on the top and sides at least once a year from the time of planting until maturity. If the hedge is formed of fast-growing plants it will need to be trimmed twice or three times a year to keep it in proper shape. If allowed to grow rapidly until it reaches the desired height before trimming is commenced, it will always have a thick top and thin open sides. Hedges must be built from the ground up by trimming the sides as well as the top each year. They may be trimmed at almost any time of year, except when the wood is frozen, or during a hot, dry spell in midsummer. Little accurate experimental work has been done but the following method has proved the most economical. The exact dates will vary by a week or two according to the section of the country or the climatic difference in season.

Growth of deciduous shrubs at Ottawa starts the first half of May, and little irregularity is evident until after the first of June. Thus, if the hedge is allowed to almost finish its season of active growth (usually the end of June) before it is trimmed, it will look untidy for only about 2 weeks. This one trimming late in June or early in July will be sufficient for many kinds of hedge material. Fast-growing hedges, however, will need a second clipping in early September. In formal work, where extreme neatness is desired, three trimmings a year may be necessary—in early June, mid-July, and early September.

This system must be varied with evergreens. Most of them start growth later in spring than do deciduous trees and do not finish active growth until July. Pine, spruce, hemlock, and yew may be sheared about the middle of July, preferably during dull weather. Young pine hedges are best done with a knife in mid-June, cutting about half the length from each terminal "candle" of young growth before the needles are fully out. The cedar does not finish active growth until September and if one is willing to have a little roughness in appearance for a few weeks it need not be trimmed until September 1. If it is trimmed in July, a second trimming will be necessary in September.

Shape

In Canada, the shape to which the hedge is trimmed is very important. A hedge with rounded or pointed top is preferable since flat-topped hedges are more easily broken down by the weight of ice and snow. To remain healthy, the foliage on the sides of the hedge must receive sufficient light to enable it to manufacture food. If the sides are perpendicular, the lower foliage ceases to perform its function and dies. For this reason it is most important, in tall hedges particularly, that the hedge be trimmed so that it is wider at the base than at the top. The accompanying illustration (Figure 4) shows the correct and incorrect shapes in cross-section.

Once the hedge has reached the approximate height at which it is to be maintained, it may be cut back close to the base of the current season's growth so that it is allowed to grow only 3–5 cm in height and width each year.

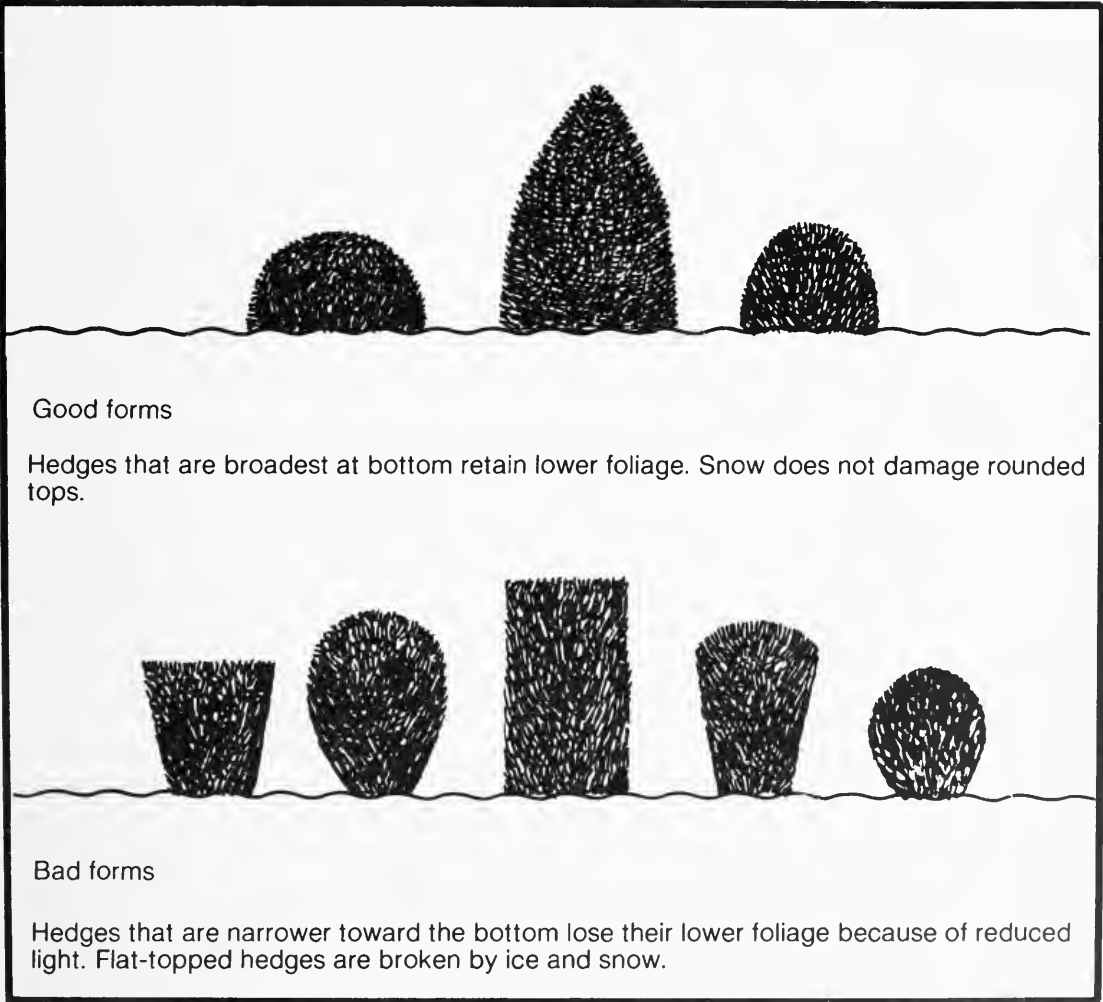


Figure 4 Hedge shapes, correct and incorrect.

As pointed out previously, the type of trimming known as “topiary work,” practiced a hundred years or more ago, is coming back in modified forms in connection with modern architecture. Where these buttresses or curves are desired, it is advisable to use two rows of plants and vary the width and height to which the hedge is trimmed, as shown in Figure 5.

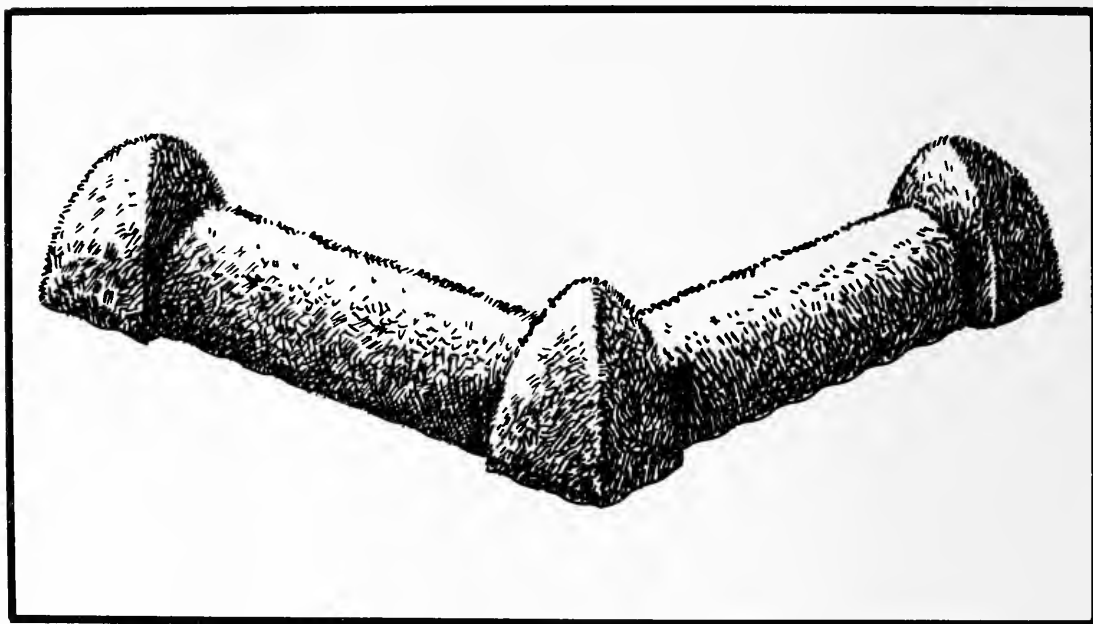


Figure 5 Diagram of a buttressed hedge.

Flowering hedges

The annual pruning of flowering hedges is quite different from the trimming described above. The work should be done as soon as possible after bloom is finished, using a knife or secateurs to remove individual branches. Only sufficient wood should be thinned out to prevent the shrubs from growing beyond bounds and to maintain a fairly uniform line. The branches should be cut below the laterals that have borne flowers but above the point at which new growth, on which next years' flowers will be borne, is commencing.

Neglected hedges

Old deciduous hedges that have been neglected may be cut back severely in early spring and will revive in a few years. The best practice is to use a pair of secateurs to remove all dead wood and cut back the individual thick branches at least 50 cm below the desired height. Then the younger wood on the sides and top should be trimmed off with the hedging shears 15–25 cm below the desired height. This will allow sufficient room for new growth to make a dense surface.

Evergreen hedges cannot be treated in this manner as they do not readily put out new foliage from old wood and will not recover satisfactorily after severe cutting back. If a cedar, spruce, or yew hedge has grown much too far above eye level, the most that can be done is to cut out the main leaders 30 cm below the desired height and tie the branches from either side together to partly fill the gap. In time, the branches will stay in place and new shoots will gradually fill the space. This is a slow process and it is usually wiser to remove the old hedge and plant a new one.

FEEDING

Like all living things, hedges must be fed to make good growth. The addition of well-rotted manure or good garden compost to give the hedge a good start was mentioned under "planting." As a hedge is a long-time occupant of the soil, further feeding is advisable from time to time. This is best done by the addition of organic mulches, such as leaf mold, rotted manure, or straw, spread over the ground beneath the hedge, to which is added a general-purpose chemical fertilizer. At Ottawa a fertilizer containing 9% nitrogen, 5% phosphoric acid, and 7% potash (9-5-7) has proved very satisfactory in hastening the decomposition of the mulch and supplying available nitrogen to the plants during the process. A hedge 20 m long requires about 1 m³ of mulch and 2 kg of fertilizer.

A well-established hedge that has reached the height desired should be fed only every 2 or 3 years, as too rapid growth is undesirable. Only enough is necessary to keep the hedge in healthy condition.

DISEASES AND INSECT PESTS

Many fungus diseases and insect pests attack the shrubs and trees used as hedge material. Arborvitae (cedars), birches, linden, and lilacs are subject to attack by leaf-mining insects; hawthorns may be attacked by many insects that attack the apple; lilac and honeysuckle under crowded or shady conditions often develop a fungus called mildew. Under unduly moist conditions spirea and Siberian elm may suffer from wood-rotting fungi that attack the base of the plants. Siberian elm may also be attacked by the Dutch elm disease, but it is much more resistant than American elm.

Insects, such as aphids, that feed by sucking juices from plant tissue can be controlled by contact sprays. Insects that bite holes in leaves can be controlled by stomach poisons. Fungus diseases cannot be cured by spraying, but they can be prevented from spreading by the use of a fungicide. For information on the identification and control of diseases and insects, ask your provincial entomologist or agricultural representative.

BEST HEDGES OF VARIOUS CLASSES FOR CANADIAN CONDITIONS

FORMAL, TRIMMED HEDGES		
Evergreen	Over 200 cm	Deciduous
<i>*Ilex aquifolium</i> <i>Picea glauca</i> <i>Pinus cembra</i> <i>Taxus cuspidata</i> <i>Thuja occidentalis</i> <i>Tsuga canadensis</i>		<i>Caragana arborescens</i> <i>Cotoneaster integerrimus</i> <i>Crataegus crus-galli</i> <i>Syringa josikaea</i> <i>Ulmus pumila</i> <i>Viburnum lantana</i>
Under 200 cm		
<i>Buxus microphylla</i> var. <i>koreana</i> <i>*Ilex aquifolium</i> <i>*Lonicera nitida</i> <i>Pinus mugo</i> var. <i>mugo</i> <i>Taxus cuspidata</i> <i>Thuja occidentalis</i>		<i>Caragana aurantiaca</i> <i>Ligustrum amurense</i> <i>Physocarpus opulifolius</i> 'Nanus' <i>Prinsepia sinensis</i> <i>Prunus tomentosa</i> <i>Ribes alpinum</i>

INFORMAL HEDGES

Flowering	Fall or winter color	Attractive fruit
Over 200 cm		
<i>Lonicera tatarica</i>	<i>Acer ginnala</i>	<i>Cotoneaster integriramus</i>
<i>Philadelphus coronarius</i>	<i>Crataegus crus-galli</i>	<i>Crataegus succulenta</i>
<i>Prunus serotina</i>	<i>Euonymus alatus</i>	<i>Euonymus europaeus</i>
<i>Syringa josikaea</i>	<i>Quercus imbricaria</i>	<i>Lonicera tatarica</i>
<i>Syringa vulgaris</i>	<i>Salix alba</i> var. <i>chermesina</i>	<i>Viburnum trilobum</i>
<i>Viburnum opulus</i>	<i>Salix alba</i> var. <i>vitellina</i>	
Under 200 cm		
<i>* Deutzia scabra</i>	<i>Cornus sericea</i>	<i>Cotoneaster acutifolius</i>
'Pride of Rochester'	<i>Cornus sericea</i> 'Flaviramea'	<i>Euonymus nanus</i>
<i>Prunus japonica</i>	<i>Prinsepia sinensis</i>	<i>Lonicera</i> × <i>xylosteooides</i>
<i>Rosa rugosa</i>		'Clavey's Dwarf'
<i>Spiraea</i> × <i>arguta</i>		<i>Shepherdia argentea</i>
<i>Spiraea</i> × <i>vanhouttei</i>		
<i>Tamarix ramosissima</i>		
<i>Weigela florida</i>		

* Only useful in limited area. Before choosing material it would be wise to consult zones of hardiness given in the table at the end of the publication.

NOTES ON THE BEST HEDGES

The following notes cover the plants that have proved most reliable in trials, or those that have been commonly used by others. They may be useful in deciding on a suitable hedge for a particular situation. The table at the end of the publication should be consulted before making a final selection. It is particularly important to check the zone in which the plant is hardy. The various hardiness zones in Canada are shown on the map in the center of this publication.

In these notes plants are divided into two groups, evergreens and deciduous. Most of the former, such as pines and cedars, are narrow-leaved, but a few, including Korean box and holly, are broad-leaved. In zone 4 and sometimes in zone 5 these broad-leaved evergreens often have the upper foliage scorched brown by winter sun, when the roots cannot supply necessary moisture. They therefore lose much of their value, even though the wood is not killed.

Evergreen hedges

Buxus microphylla var. *koreana*—The Korean littleleaf box has been grown in Canada only since the mid-1940's. It has, however, proved satisfactory as a low broad-leaved evergreen. It is much hardier than the common box, which will grow only in limited areas of zone 7. The foliage is frequently scorched above the snowline at Ottawa, though the wood is perfectly hardy. Recent Canadian selections have mostly overcome this defect for regions down to zone 5. It is very good as a low hedge, 30–50 cm high, for edging paved terraces or walks. As its value is in extreme neatness it should be trimmed twice a year.

Chamaecyparis pisifera 'Filifera'—The threadleaf cypress is at the limit of its hardiness at Ottawa but makes a very attractive dark green, fine-textured hedge. For best effect it should be trimmed only every second year as this will give it a softer texture. If trimmed more often, fine dead twigs result.

Ilex aquifolium—English holly is hardy only in very limited areas but it stands clipping so well and the foliage and fruit are so attractive all through the winter season that it should be used wherever possible. It may be used as a tall or low hedge.

Juniperus virginiana—The native eastern red cedar is the only juniper to make a satisfactory hedge at Ottawa, while the native western red cedar, *J. scopulorum*, is good in many parts of the West. Both of these vary considerably in foliage color and habit of growth when grown from seed so that it is necessary to select from a large number of plants to get enough to make a uniform hedge. There are named cultivars of both but these are usually too expensive to use for a hedge.

Lonicera nitida—The box honeysuckle so popular in Europe is hardy only in limited areas. The evergreen foliage is lustrous dark green above and lighter beneath, which gives a pleasing surface. It is good as a low neat hedge.

Picea—All the species of spruce that have been tried make excellent tall hedges, and may even be kept under 150 cm for a number of years. The native white spruce, *P. glauca*, is a little slow in growth to satisfy most home owners, but over a number of years makes a better hedge than the more rapidly growing Norway spruce, *P. abies*, which does not stand trimming so well. The blue Colorado spruce, *P. pungens* 'Glauca', makes a good hedge where a lighter gray green color is desired, but since seedlings are variable in color one should select from a large number to get a hedge of uniform color. Spruce should be planted 100 cm apart to form a hedge 200 cm high. As mentioned previously spruce hedges should not be cut back below the base of the current season's growth as large holes will result.

Pinus—Most of the pines tried at Ottawa have made excellent long-lasting hedges if trimmed properly by cutting back the terminal shoots of new growth before the needles are fully developed.

The Swiss stone pine, *P. cembra*, has been the most outstanding in quality but is difficult to obtain and very slow growing. The native Eastern white pine, *P. strobus*, and red pine, *P. resinosa*, have both made good hedges and form ideal, soft-textured backgrounds for any garden. Both can be easily obtained from the bush when small, or grown from seed, and are particularly useful on dry sandy soil. They should be planted 75–100 cm apart for best results. Scots pine, *P. sylvestris*, is hardier than the others and will grow on heavier soil, but is too open in growth to be very satisfactory. The dwarf mountain or mugho pine, *P. mugo* var. *mugo*, makes a good low hedge but is often attacked by a white scale that disfigures the foliage and will eventually cause death, unless controlled.

Taxus cuspidata—Japanese yew makes an evergreen hedge of the highest quality. As it requires a number of years to grow small plants, the cost is much higher than where young native evergreens are used but the quality is better. The dark green foliage is closely packed and the texture firm. It stands trimming well and may be formed into any desired shape. In this respect it is our nearest equivalent to the European boxwood. It is a fine plant for moist, shady positions but will grow well in sun if moisture is provided.

Thuja occidentalis—The arborvitae or native white cedar is the most frequently used evergreen hedge in Eastern Canada. Plants 30–60 cm high can be obtained easily at little cost from pastures and woodlots in almost any district. Taller plants may be used but rarely make as good dense hedges unless they have been grown in a nursery to develop a good root system. These small plants should be placed 50 cm apart and trimmed on the sides and top early in September each year. Cedar will grow under widely varying conditions of light, soil, and moisture, but it needs plenty of moisture until it is established. Hedges may be maintained at any height over 100 cm for 50 to 60 years. One hedge at Ottawa has been kept quite dwarf since 1911.

Many horticultural forms have been tried at Ottawa with great success, but these are all more expensive than the common form. The best form with golden foliage is *Thuja occidentalis* 'Douglasii Aurea'. The form

T. o. 'Hoveyi' is bright green with gold-tipped foliage, and it has a very attractive erect habit of growth that is often spoiled by snow; *T. o.* 'Robusta' ('Wareana'), the Siberian cedar, is a little hardier than the native but coarser in texture.

Tsuga canadensis—The Canadian hemlock has made a very good hedge at Ottawa and elsewhere. After 90 years it has started to develop a few holes but is still most attractive. The growth is compact and the color and texture are pleasing wherever high quality is desired. Unfortunately, growth is too slow for the average home owner. It is good in either sun or shade.

Deciduous hedges

Betula populifolia—The gray birch is hardy all across Canada and has made the best hedge of any of the birches tested at Ottawa, though the river birch, *B. nigra*, was also very good. Unfortunately, birches are attacked by small caterpillars that strip the leaves to skeletons. These are much more difficult to control on a hedge than on a single specimen plant.

Caragana arborescens—Because of its success as a windbreak on the prairies, the Siberian peashrub is probably the most widely known tall hedge in Canada. It is hardy and drought resistant, and succeeds on heavy or light soil. It can be purchased from almost any nursery or can be grown from seed quite easily. The foliage is small, bright green, and particularly attractive in spring. As it makes most of its growth early in the season, one trimming in late June or early July is usually sufficient. If desired as a windbreak it may be allowed to grow 500–550 cm tall but it is usually maintained at 200–250 cm. Unfortunately, it is often attacked by leafhoppers, which cause the tips to turn yellow in late midsummer.

Caragana aurantiaca—The dwarf peashrub, often incorrectly labeled *C. pygmaea*, is one of the hardiest and most suitable plants to use for a low hedge. The foliage is dull green and very fine in texture, almost resembling that of asparagus. Unlike *Caragana arborescens*, the branches have rachises or prickles at the bases of the leaves, which add to its usefulness where dogs are numerous.

Cornus sericea—The red-osier dogwood and its yellow-barked cultivar, *C. sericea* 'Flaviramea', are attractive in the garden during winter because of their highly colored bark. They do well in moist, partly shaded situations and are best maintained as an informal hedge about 125 cm high. To produce maximum color in winter they should be cut back severely in spring to force out long shoots of new growth. The foliage is too coarse to be very attractive as a closely clipped hedge.

Cotoneaster integerrimus—The European cotoneaster is hardy and has proved more valuable as a hedge on the prairies than at Ottawa, where it is thought to be coarse and less attractive than *C. acutifolius*, the Peking cotoneaster, which has smaller, brighter foliage. Unfortunately these, like dogwood hedges, are subject to attacks of oystershell scale in districts where apples are grown. They must be sprayed in early spring.

Crataegus crus-galli—The cockspur hawthorn has proved outstanding as a tall hedge at Ottawa. After 60 years it still retained its thorny branches so close to the ground that dogs and children could not run under it. The foliage is glossy, attractive, and turns a pleasing scarlet and brown in autumn. Unfortunately it is also attacked by oystershell scale and other insects that attack apples and must be sprayed accordingly.

The English hawthorn, *C. laevigata*, makes an excellent hedge in milder districts where it flowers attractively in the early summer before the proper date for trimming. *C. pinnatifida*, another species with lobed foliage, is proving very successful at Morden, Man., where *C. succulenta*, the fleshy hawthorn, is useful as an informal hedge with attractive fruit in fall.

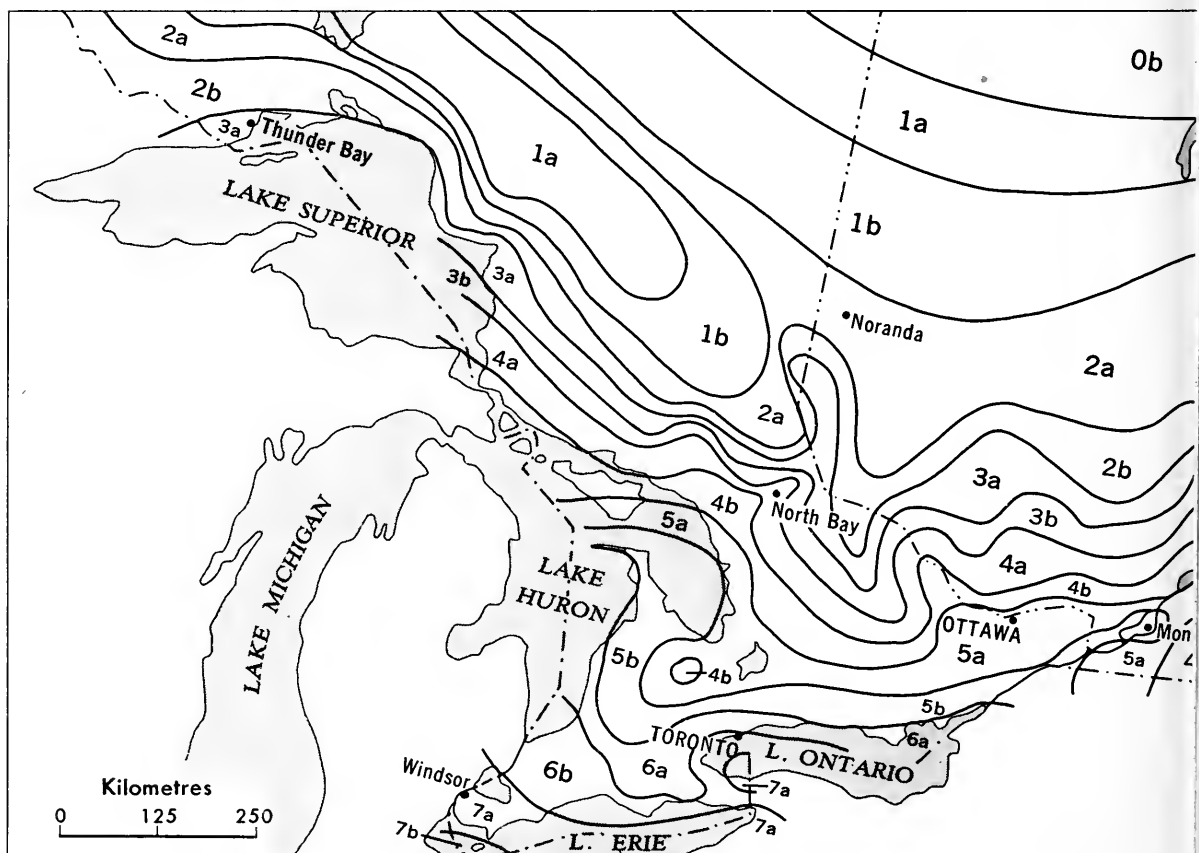
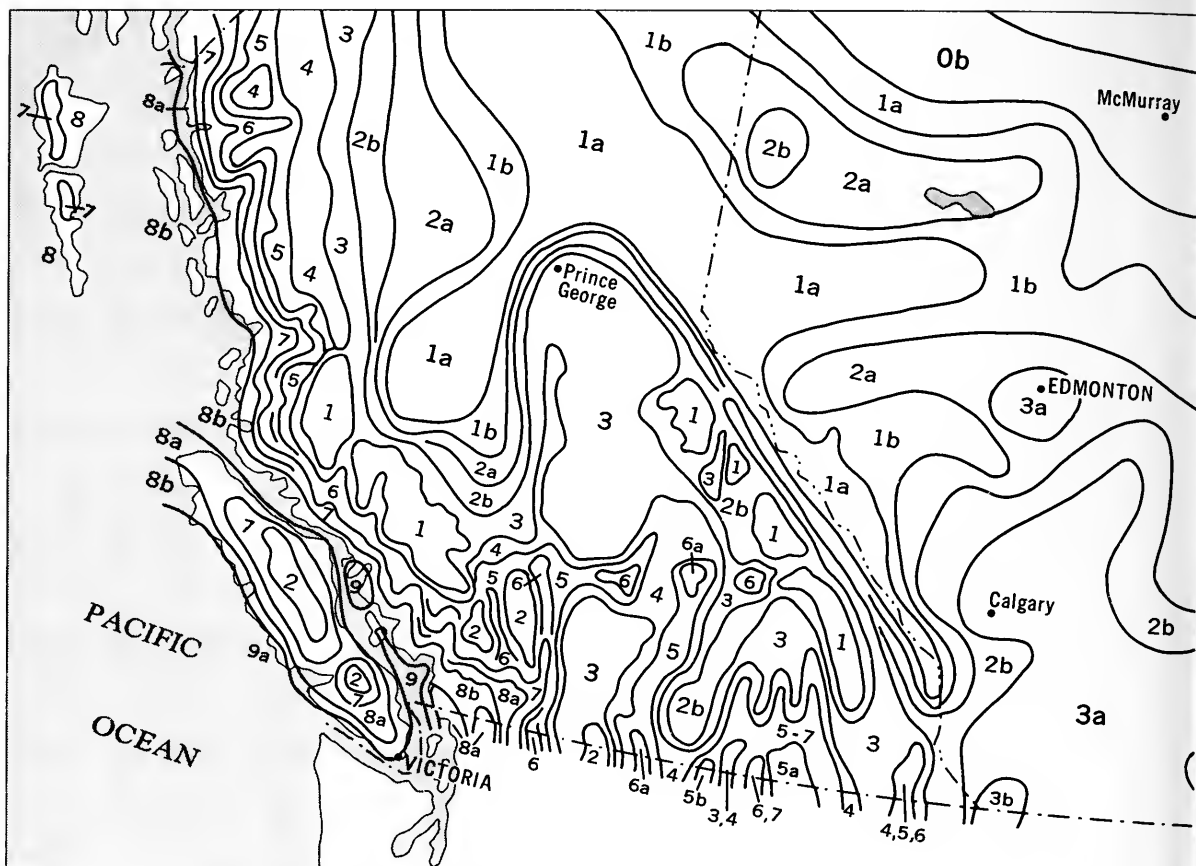
Gleditsia triacanthos—The common honey-locust has been popular as a tall, thorny hedge, particularly in Quebec. As it grows vigorously it needs frequent trimming, particularly in the early years, to make it bushy close to the ground. The foliage is very attractive, fine in texture, and fairly free from insect attack. It can be grown from seed easily if the seeds are soaked in hot water (about 40°C) overnight to soften the hard outer coat.

Larix—Both the native taramack, *L. laricina*, and the European larch, *L. decidua*, make good hedges of fine soft texture and bright green color particularly in spring when they are most pleasing. They can be maintained very easily at 150–200 cm in height by trimming once in late June or early July.

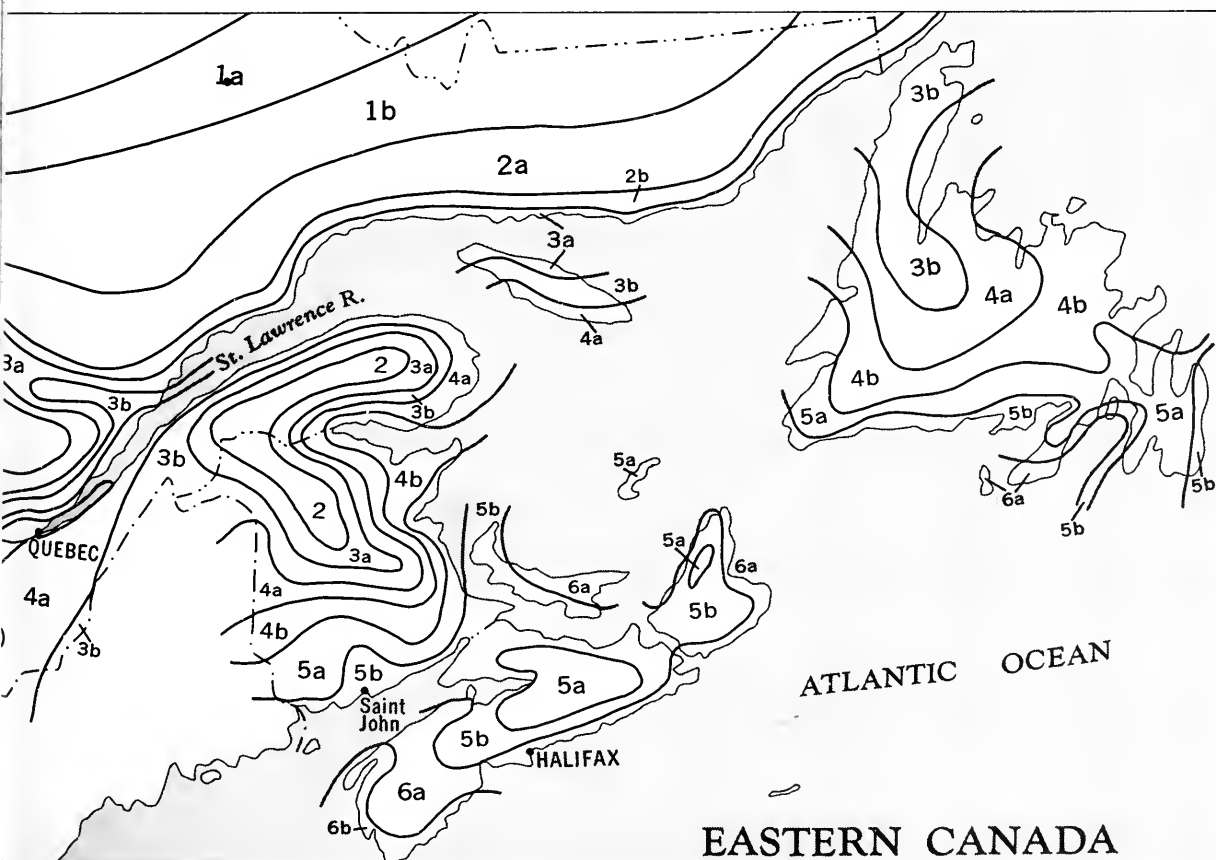
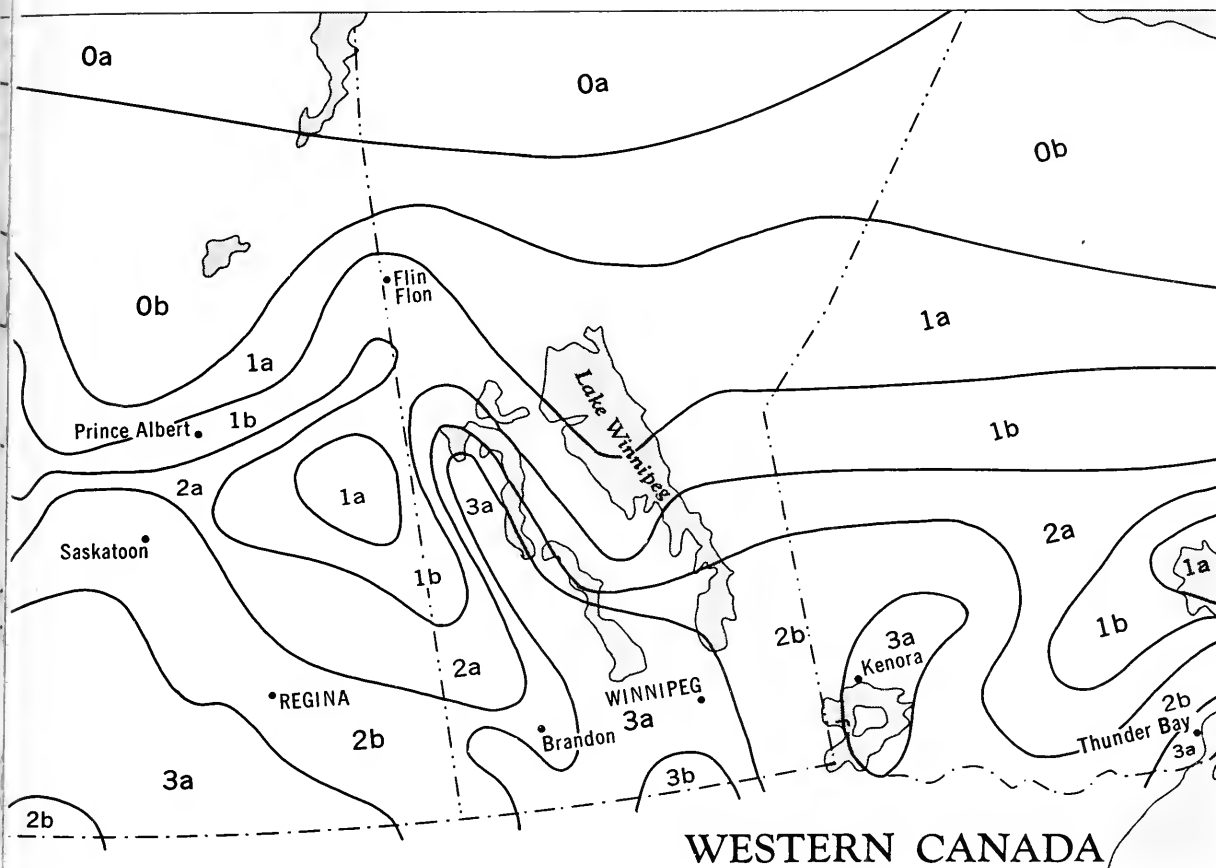
Ligustrum—Privet is a European favorite that makes an excellent hedge wherever it is hardy. All species grown in Canada are much alike in appearance, having narrow, shiny green foliage, and ascending habit of growth. They stand trimming very well and, as they grow rapidly over a long season, need to be trimmed in June and September at least. The Amur privet, *L. amurense*, and the pyramidal strain of the common privet, *L. vulgare* 'Pyramidale', have proved hardier than other forms at Ottawa, where the latter suffers least of all. As even these are killed back occasionally at Ottawa, they are suitable only as low hedges 100–125 cm high. They are most useful near drives or sidewalks where, if snow is plowed on top of them, their stiff growth will withstand damage much better than most hedges. Where winter damage occurs they may be cut back severely and will recover rapidly.

Lonicera tatarica—The Tatarian honeysuckle has been commonly used as a hedge 125–200 cm in height. It is hardy over a wide area, grows well in either sandy or clay soil, and does reasonably well in partial shade. Although it stands trimming well it often develops a fungus known as mildew when grown in crowded conditions. This can be kept in check by spraying. This honeysuckle makes an excellent tall flowering hedge with light pruning carried out in late June each year. The fruit is also attractive. Various cultivars have flowers ranging from pink to dark red and fruits from yellow orange to bright crimson.

Philadelphus coronarius—Sweet mock orange has been used for hedge purposes a great deal, particularly in the Toronto district. It is



Plant hardiness zones in Canada.



Cartography by the Land Resource Research Institute, Research Branch, Agriculture Canada, 1980.

attractive and in milder districts stands trimming well. At Ottawa, however, it developed so much dead twiggy growth that trimming is a tedious job. It would appear to be much more valuable as a flowering hedge 200–250 cm high. Shorter cultivars can also be used in this fashion.

Physocarpus opulifolius 'Luteus'—Goldleaf ninebark is hardy over a wide area and probably the best plant to use where a bright-colored hedge that grows to a height of 200 cm is desired. Such a hedge needs full sunshine to develop color properly. The texture is coarse but the plant is reliable.

Prinsepia sinensis—The cherry prinsepia has made an attractive hedge at Morden, Man., and on heavy soil in the districts across the prairies where it is hardy. The winter wood is silvery gray and thorny. The bright green foliage is narrow and neat in appearance. It has not done well on sandy soil at Ottawa, where it continues to grow late in summer and frequently is killed back in winter.

Prunus—Many species of plum and cherry have been tried as hedges at Ottawa, with mediocre results. Most become thin on the sides and bare of lower branches at an early age. The best tall one at Ottawa was *P. serotina*, the native black cherry, which has attractive long narrow foliage. *P. virginiana*, the native chokecherry, makes a fairly good tall hedge and *P. japonica*, the Japanese bush cherry, has made a good hardy low hedge on heavier soils in the West. *P. tomentosa*, the Nanking cherry, will also make a good hedge that can be kept as low as 100 cm by clipping two or three times a year.

Quercus imbricaria—The shingle oak is a native of Pennsylvania but has proved perfectly hardy at Ottawa where it has made much the best tall hedge of any of the oaks tested. The leaves are long, narrow, and bright green in color, with leathery texture. Unlike other oaks, they are not lobed or cut-edged. The foliage turns shining bronze with frost and remains on the branches through the winter. Unfortunately, the acorns are usually wormy so that nurserymen find it hard to grow a supply of trees.

Ribes alpinum—The alpine currant has proved to be the most suitable low deciduous hedge over a large area of the country. It is firm and compact in growth. The attractive lobed foliage is fairly free from serious attacks by insects other than aphids, which can be controlled with contact sprays. It seems able to adapt itself to either clay or sandy soil.

Rosa multiflora—Because of its success as a rough farm fence in the middle western United States, the Japanese rose has received more publicity as a hedge plant than is warranted. Where it grows vigorously, in districts milder than Ottawa, the long arching branches will pile up into a thick tangled thorny barrier through which cattle will not pass. But even where hardy it is not suitable as a city hedge unless trimmed frequently and this work is very unpleasant. At Ottawa it dies back to the snowline each year and consequently is not suitable.

Rosa rugosa—The rugosa rose does not make a good clipped hedge though it has often been used for this purpose. The habit of growth is too

upright and open to form a solid compact surface. As a flowering hedge, however, it is very effective, particularly if the continuous blooming cultivars such as 'F. J. Grootendorst' or 'Pink Grootendorst', which flower from early July to frost, are used.

Salix—Willow hedges are valuable chiefly in moist situations or where the effect of winter color is desired. They have proved particularly attractive at Morden, Man., and are hardy and valuable over a large area. On the dry sandy soil at Ottawa they have been badly damaged by gall aphids, small insects that cause large warty growths at the base of stems that result in their death. Affected stems should be cut out and burned as soon as the growths appear.

If winter color is desired the type of pruning known as "pollarding" should be practiced. That is, the hedge should be cut back severely early in spring to promote the growth of long new shoots each year, on which the bark will be more highly colored than on the old stubby growth produced by ordinary trimming.

The redstem willow *S. alba* var. *chermesina*, the yellowstem willow *S. alba* var. *vitellina*, and the purple osier *S. purpurea* are outstanding for bark color. *S. elaeagnos*, the rosemary willow, has attractive narrow silver gray foliage while that of the laurel willow *S. pentandra* is lustrous dark green. All are attractive where soil conditions are suitable.

Spiraea ×arguta—The garland spirea and *S. ×vanhouttei*, bridal wreath, both make excellent flowering hedges if maintained at a height of 150 cm. They have often been planted as clipped hedges and are fairly satisfactory though inclined to be open at the bottom.

Syringa josikaea—The Hungarian lilac has made one of the most satisfactory tall hedges at Ottawa and elsewhere. The large dark lustrous foliage is attractive and the plant is hardy. *S. vulgaris*, the common lilac, has been used more commonly as a clipped hedge but is not so useful as the Hungarian as the foliage is more subject to attack by insects and mildew. Both make good tall flowering hedges as well as trimmed ones.

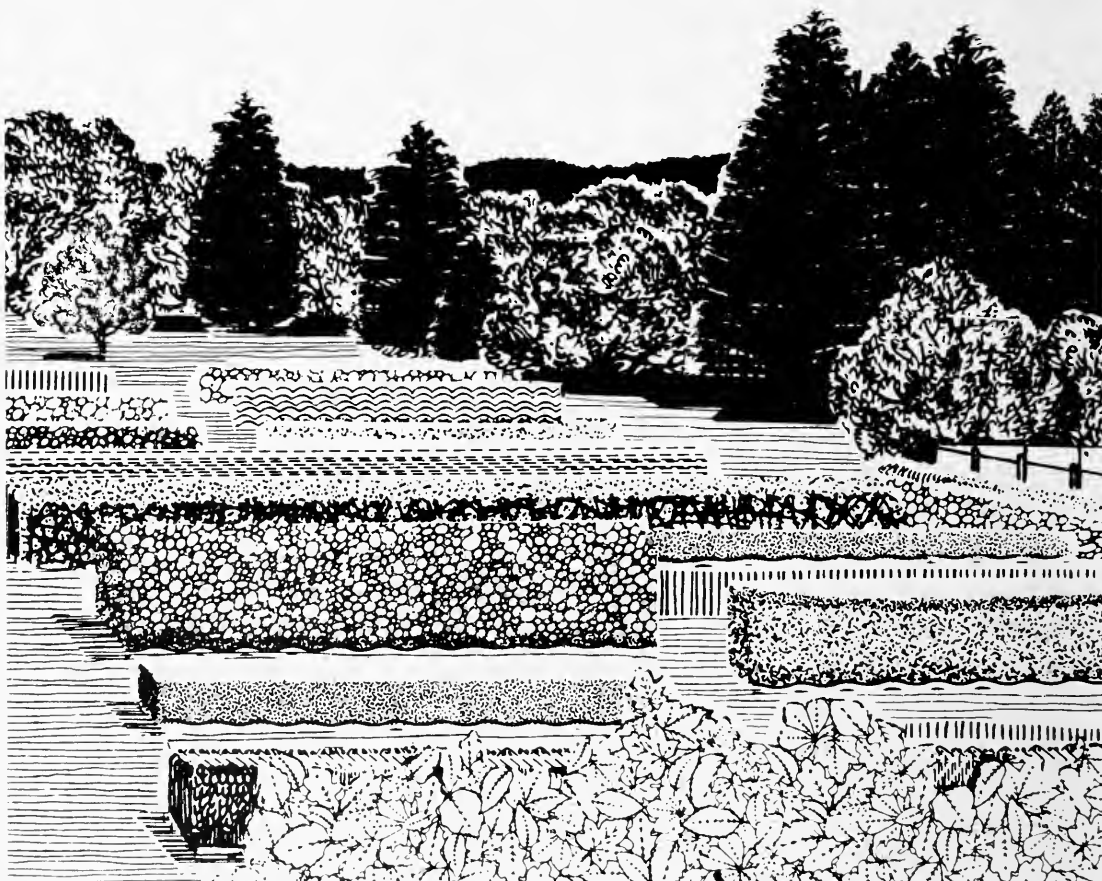
Tamarix ramosissima—The Amur tamarisk is much more valued as an interesting flowering hedge than when closely trimmed. The fine feathery foliage tipped by plumes of delicate pink flowers in late midsummer makes an unusual display. As the natural habit of growth is irregular and winter injury often occurs, it is necessary to cut it back severely each spring.

Ulmus pumila—The Siberian elm (usually wrongly called the Chinese elm) has become popular in recent years. It can be used on light soil wherever a tall, rapidly growing hedge is desired, but the owner must be prepared to trim very frequently. To maintain a hedge at 200 cm trimming will be required every 2–3 weeks during the summer. It is best to start with young plants, cutting them back hard at the time of planting in spring to make them branch out near the ground. They should be cut back again in September, leaving only 15–25 cm of the current season's growth. Three trimmings a year on the sides and top in June, July, and September until the desired height is reached should produce a good hedge. If allowed to grow without trimming the plants will rapidly develop into coarse open

trees. On moist or heavy soil this tree does not do well and is subject to the attacks of a wood-rotting fungus that produces pinkish orange blisters at the base of the stems. Such stems should be cut out and burned.

Viburnum lantana—The wayfaring tree is the most useful of the viburnums for hedges as it is fairly free from the insects that attack the others. The growth is firm and stands trimming well. The foliage, though large, is of attractive color and texture, and hangs on the branches later than that of most shrubs. It does fairly well in shade. The red-fruited viburnums, such as high bush-cranberry, make attractive, tall flowering and fruiting hedges but must be sprayed every year early in May to control the aphids that cause twisting of foliage and wood.

Weigela florida—The weigela is at its northern limit at Ottawa except for the cultivar 'Dropmore Pink'. It does not make a good trimmed hedge, but, if dead wood is cut out and shaping done in early spring, it makes a very attractive flowering hedge.



TREES AND SHRUBS TESTED AS TRIMMED HEDGES

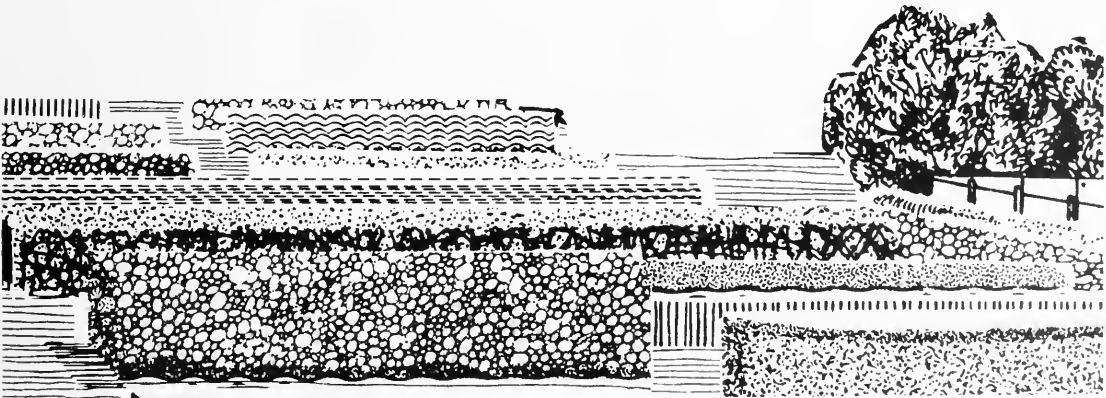
The following table briefly gives the results of tests made at research stations and experimental farms since 1889. Most of the hedges have been grown at Ottawa at some time since the Central Experimental Farm was founded. For the few exceptions, credit to the station where they are being grown is given in the column marked "comments." This table is not intended for the average homeowner but as a reference record for those more deeply interested in horticulture.

The authorities used for nomenclature were *Hortus III*, Kriissmann's *Handbuch der Laubgeholze (Handbook of Deciduous Trees)* and Den Ouden's *Manual of Cultivated Conifers*. The hardiness ratings are based on the Agriculture Canada publication *Map of Plant Hardiness Zones in Canada*, Publication 1286 *Ornamental Shrubs for Canada*, and Publication 1343 *A Checklist of Ornamental Trees for Canada*.

The column headed "Height" gives in centimetres the recommended height at which the hedge should be maintained in the zone where it is hardy. Obviously, a plant such as *Chaenomeles*, which is killed to the snowline each year at Ottawa, cannot be maintained at 125 cm in height at that locality.

The columns headed "Planted" and "Removed" give the year in which these operations were carried out. Many hedges were removed during 1929 and 1930 to make room for experimental grass plots, which explains the numerous entries under those dates. Often new hedges have been planted to replace good ones that have been removed because of damage or old age. This explains the repetition of dates for the same plant.

There is necessarily no connection between the columns headed "Reason for removal" and "Comments." A hedge may have been damaged by winter or disease at Ottawa and still make a good hedge under other conditions. Many plants such as *Lonicera nitida* make excellent hedges in milder districts. *Salix* hedges have never survived long at Ottawa on dry, sandy soil, though they are excellent on moist land.



DECIDUOUS AND EVERGREEN TREES AND SHRUBS TESTED FOR USE AS TRIMMED HEDGES

Plant	Zone of hardi- ness	Height (cm)	Planted	Removed	Reason for removal	Comments
DECIDUOUS HEDGES						
<i>Acer campestre</i> —hedge maple	5b	125–150	1895	1930	Many plants dead	Good but coarse
<i>Acer ginnala</i> —Amur maple	2	125–150	1894 1895	1911	Open at bottom	Attractive fall color
<i>Acer glabrum</i> —Rocky Mountain maple	5	125–150	1894	1930	Open at bottom	Did not stand trimming
<i>Acer monspessulanum</i> —Montpellier maple	7	125–150	1895	1930	Killed back each year	Did not stand trimming
<i>Acer negundo</i> —box-elder	2	150–175	1891	1919	Grew beyond bounds	Coarse, requires too much trimming
<i>Acer pensylvanicum</i> —striped maple	2b	125–150	1897	1911	Open at bottom	Grows in part shade
<i>Acer spicatum</i> —mountain maple	2	125–150	1897	1911	Open at bottom	Grows in part shade
<i>Alnus glutinosa</i> 'Imperialis'—royal alder	4b	125–150	1897	1930	Killed back badly	Good fall color
<i>Alnus viridis</i> —European green alder	4	125–150	1896	1930	Many dead plants	Not a good hedge
<i>Amelanchier alnifolia</i> —saskatoon	1	125–150	1925			Good hedge at Beaverlodge, Alta.
<i>Aronia prunifolia</i> —purple chokeberry	4b	100–125	1966			Good fall color
<i>Artemisia abrotanum</i> —southernwood	3	30–60	1896	1938	Too soft and not fully hardy	Attractive as low edging
<i>Betula alleghaniensis</i> —yellow birch	3b	175–250	1895	1930	Space needed	Thick firm hedge, coarse texture
<i>Betula nigra</i> —river birch	4b	175–250	1897	1930	Space needed	The best of the birch hedges

<i>Betula papyrifera</i> —canoe birch	2	175–250	1895	1930	Space needed	Did not stand trimming well
<i>Betula pendula</i> —European white birch	2	175–250	1897	1930	Many plants dead	Did not stand trimming well
<i>Betula populifolia</i> —gray birch	3	175–250	1897	1960	Getting too large	Spray birches for leafminer
<i>Calycanthus floridus</i> —Carolina allspice	5	60–100	1895	1917	Killed back frequently	Too coarse for low hedge
<i>Caragana arborescens</i> —Siberian peashrub	2	175–250	1896			Excellent for heavy soil
<i>Caragana arborescens</i> f. <i>lorbergii</i> — Lorberg's peashrub	2	150–175	1943 1965	1970	Overgrown	Too open and soft
<i>Caragana aurantiaca</i> —dwarf peashrub	2	60–100	1895	1965	Getting too large	Very fine, soft texture
<i>Caragana frutex</i> —shrubby caragana	2	100–125	1896			Many suckers keep it filled
<i>Carpinus betulus</i> —European hornbeam	7	125–150	1930 1965	1969	Open at bottom	Thick stiff texture, open at bottom
<i>Celtis occidentalis</i> —common hackberry	2b	150–175	1891	1929	Space needed	Too coarse
<i>Chaenomeles japonica</i> —Japanese quince	5b	100–125	1894	1911	Killed back each year	Attractive bloom where hardy
<i>Cornus alba</i> 'Argenteo-marginata' — silverleaf dogwood	2	125–150	1896	1929	Space needed	Hard to establish, silvery color
<i>Cornus alba</i> 'Sibirica' —Siberian dogwood	2	175–250	1891	1929	Space needed	Attractive winter wood but coarse
<i>Cornus amomum</i> —silky dogwood	4b	125–175	1897	1929	Space needed	Too open and coarse
<i>Cornus sericea</i> —red-osier dogwood	1b	100–125	1911	1930	Space needed	Attractive winter wood
<i>Cornus sericea</i> f. <i>baileyi</i> —Bailey's dogwood	4b	125–150	1897	1930	Too open at base	
<i>Cornus sericea</i> 'Flaviramea' —yellowtwig dogwood	1b	125–150	1924			Attractive winter wood
<i>Corylus americana</i> —American hazel	2b	125–150	1925	1956	Open at base	Good fall color but too coarse
<i>Cotoneaster acutifolius</i> —Peking cotoneaster	2	125–150	1936			Very good foliage, oystershell scale
<i>Cotoneaster buxifolius</i> —boxleaf cotoneaster	5	100–125	1895	1911	Winter-killed frequently	Good where hardy

DECIDUOUS AND EVERGREEN TREES AND SHRUBS TESTED FOR USE AS TRIMMED HEDGES (Continued)

Plant	Zone of hardi- ness	Height (cm)	Planted	Removed	Reason for removal	Comments
<i>Cotoneaster integerrimus</i> — European cotoneaster	2	125–150	1896	1930	Many plants dead	Good hedge on western stations
<i>Cotoneaster lucidus</i> — hedge cotoneaster	1	125–150	1960			
<i>Cotoneaster microphyllus</i> — little-leaved rock cotoneaster	2	100–125	1895	1911	Winter-killed frequently	Good where hardy, satisfactory at Morden, Man.
<i>Cotoneaster simonsii</i> — Simons' cotoneaster	4	100–125	1895	1911	Winter-killed frequently	Too open for good hedge
<i>Crataegus crus-galli</i> — cockspur hawthorn	2b	250–300	1913	1975	Thin at bottom	Excellent, thorny, good fall color
<i>Crataegus erythropoda</i> — chocolate hawthorn	2	200–300	1969			Good fall color and fruits
<i>Crataegus intricata</i> — thicket hawthorn	2	150–300	1936			Excellent dense hedge
<i>Crataegus laevigata</i> — English hawthorn	6	175–250	1925			Attractive where hardy, Sidney, B.C.
<i>Crataegus pedicellata</i> — Ontario hawthorn	2	250–300	1936			Thorny, good, thin at base
<i>Crataegus pinnatifida</i> — Chinese hawthorn	3	175–250	1932			Attractive foliage at Morden, Man.
<i>Crataegus succulenta</i> — fleshy hawthorn	2	175–250	1932			Attractive hedge at Morden, Man.
<i>Cytisus glaber</i> — broom	5	60–100	1894	1911	Many plants dead	Not satisfactory at Ottawa
<i>Cytisus supinus</i> — bigflower broom	5	60–100	1894	1911	Many plants dead	Not satisfactory at Ottawa
<i>Deutzia scabra</i> — fuzzy deutzia	5b	125–150	1894	1911	Killed back frequently	Better as flowering hedge
<i>Deutzia scabra</i> 'Pride of Rochester'	5b	125–150	1925	1933	Killed back frequently	Better as flowering hedge

<i>Elaeagnus angustifolia</i> —Russian olive	2b	175–250	1917	1929	Too open on sides	Makes good hedge in West
<i>Euonymus americanus</i> —strawberry bush	5b	125–175	1897	1911	Too open	Not satisfactory
<i>Euonymus europaeus</i> —European spindle tree	4	175–250	1925	1962	Too open	Not satisfactory, open at base
<i>Euonymus nanus</i> —dwarf euonymus	2	60	1897	1911	Not stiff enough	Attractive foliage but thin
<i>Euonymus nanus</i> 'Turkestanicus'— Turkestan euonymus	2	30–60	1965			Dwarfer than type, also called <i>E. n.</i> 'Koopmanni'
<i>Fagus grandifolia</i> —American beech	4	175–250	1897			Very slow to form a hedge
<i>Fagus sylvatica</i> —European beech	6	175–250	1895	1913	Killed back to snowline	Good where hardy, Sidney, B.C.
<i>Fontanesia fortunei</i> —Fortune's fontanesia	5	125–150	1967			Remains green late into fall
<i>Fraxinus pennsylvanica</i> var. <i>lanceolata</i> — green ash	2b	175–250	1925	1939	Too coarse for good hedge	
<i>Gleditsia triacanthos</i> —common honey-locust	4	175–250	1889 1945	1938	Grew beyond bounds	Thorny, needs frequent trimming
<i>Halimodendron halodendron</i> —salt tree	2b	125–150	1938			Too thin, dull gray color, not attractive, but salt tolerant
<i>Hamamelis virginiana</i> —common witch-hazel	4b	125–175	1913			Flowers in October, too thin
<i>Hippophae rhamnoides</i> —common sea-buckthorn	2b	125–150	1895 1969	1915	Irregular and open	Gray foliage, not attractive
<i>Hydrangea paniculata</i> 'Grandiflora'— peegee hydrangea	3b	125–150	1915	1960	Overgrown	Better as flowering hedge
<i>Ilex verticillata</i> —winterberry	3b	125–175	1930	1950	Space needed	Good hedge, red berries
<i>Larix decidua</i> —European larch	3b	125–175	1897			Very soft, light green
<i>Larix laricina</i> —tamarack	1	125–175	1895	1929	Space needed	Good in moist places
<i>Ligustrum amurense</i> —Amur privet	5	100–125	1926 1965	1954	Thin at base	Killed back some years
<i>Ligustrum xibolium</i> —Ibolium privet	5b	100–125	1932	1951	Winter-killed frequently	Good where hardy

DECIDUOUS AND EVERGREEN TREES AND SHRUBS TESTED FOR USE AS TRIMMED HEDGES (Continued)

Plant	Zone of hardi- ness	Height (cm)	Planted	Removed	Reason for removal	Comments
<i>Ligustrum obtusifolium</i> var. <i>regelianum</i> — Regel's privet	5b	60–100	1926			Good where hardy
<i>Ligustrum ovalifolium</i> —California privet	7	60–100	1932	1938	Winter-killed frequently	Good where hardy
<i>Ligustrum vulgare</i> —common privet	5b	100–125	1924			Killed back some years
<i>Ligustrum vulgare</i> 'Pyramidale'— pyramidal privet	5	100–125	1948			Hardy to date
<i>Lonicera tatarica</i> —Tatarian honeysuckle	2	125–175	1896			Better as flowering hedge
<i>Lonicera tatarica</i> 'Carleton'—Carleton Tatarian honeysuckle	2	125–175	1965	1930	Space needed	A deep pink variety, originated at the Central Experimental Farm
<i>Lonicera tatarica</i> 'Crimsona'—crimson Tatarian honeysuckle	2	125–175	1966			A form with bright crimson flowers
<i>Lonicera tatarica</i> 'Hack's Red'—Hack's Tatarian honeysuckle	2	125–175	1965			Attractive dark red flowers
<i>Lonicera</i> × <i>xylosteoides</i> 'Clavey's Dwarf'—Clavey's dwarf honeysuckle	2	100–125	1960			A dwarf form of the European fly honeysuckle
<i>Malus baccata</i> —Siberian crab apple	2b	125–175	1897			Not attractive
<i>Malus</i> hybrids—rosybloom crab apple	2b	125–175	1926	1911	Space needed	Good foliage color, but too many insects
<i>Malus pumila</i> 'Niedzwetzkyana'— Niedzwetzky's dwarf crab apple	4	125–150	1966			Bronzy foliage all summer
<i>Malus transitoria</i>	2b	100–125	1926	1942	Needed for apple rootstock	Excellent foliage. Very good at Morden, Man.

<i>Morus alba</i> 'Tatarica' — Tatarian mulberry	3	250–300	1889	1950	Grew beyond bounds	Attractive foliage
<i>Philadelphus caucasicus</i> 'Aureus' — golden mock orange	3	125–175	1894	1911	Too much dead wood	Good golden color
<i>Philadelphus coronarius</i> — sweet mock orange	3	125–175	1894	1929	Space needed	A lot of small dead wood
<i>Philadelphus coronarius</i> 'Duplex' — double sweet mock orange	3	30–60	1898	1911	Unattractive and irregular	Foliage too coarse for height
<i>Philadelphus inodorus</i> var. <i>grandiflorus</i> — big scentless mock orange	3	175–250	1897	1929	Foliage too coarse	Good but coarse
<i>Philadelphus lewisii</i> — Lewis mock orange	2b	175–250	1897	1929	Much dead wood	Unattractive
<i>Physocarpus opulifolius</i> — ninebark	2b	150–200	1896	1929	Space needed	Too coarse to be attractive
<i>Physocarpus opulifolius</i> 'Luteus' — goldleaf ninebark	2b	150–200	1890			Coarse but good gold color
<i>Physocarpus opulifolius</i> 'Nanus' — dwarf ninebark	2b	100–125	1960			An attractive dwarf form of ninebark
<i>Populus nigra</i> 'Italica' — Lombardy poplar	3	250–300	1896	1929	Grew beyond bounds	Better as tall windbreak
<i>Potentilla parvifolia</i> 'Gold Drop' — gold drop cinquefoil	3	60–100	1956			At Morden, makes an excellent flowering hedge
<i>Prinsepia sinensis</i> — cherry prinsepia	2b	60–125	1932			At Morden, kept at 75 cm high. Makes a good thick hedge
<i>Prunus americana</i> — American plum	3	150–175	1894	1915	Too open on sides	Foliage too coarse
<i>Prunus ×cistena</i> — purpleleaf sand cherry	4	125–150	1965			An attractive hedge, with purple foliage
<i>Prunus grayana</i> — Japanese bird cherry	4	125–150	1900	1919	Black knot disease	A fairly good hedge
<i>Prunus maackii</i> — Amur chokecherry	2b	125–175	1925			Attractive winter wood, Morden, Man.
<i>Prunus mahaleb</i> — Mahaleb cherry	4	125–175	1897	1913	Many dead trees	Apparently tender at Ottawa
<i>Prunus pensylvanica</i> — pin cherry	1	150–200	1898	1913	Too open at base	Not a good hedge
<i>Prunus serotina</i> — black cherry	2b	175–250	1897	1930	Open at bottom	Makes attractive hedge
<i>Prunus tomentosa</i> — Manchurian cherry	2	100–125	1965			Fruits edible. Flowers well even when clipped

DECIDUOUS AND EVERGREEN TREES AND SHRUBS TESTED FOR USE AS TRIMMED HEDGES (Continued)

Plant	Zone of hardiness	Height (cm)	Planted	Removed	Reason for removal	Comments
<i>Prunus virginiana</i> —chokecherry	2	175-250	1925	1952	Many bare stems	Not very attractive
<i>Ptelea trifoliata</i> —hop tree	3b	125-175	1893	1930	Many plants killed back	Thin, open, unsatisfactory
<i>Pyrus communis</i> —common pear	5	125-175	1897	1930	Many plants killed back	Thin, open, thorny hedge
<i>Quercus imbricaria</i> —shingle oak	4b	175-250	1913			Excellent foliage to ground
<i>Quercus macrocarpa</i> —bur oak	2	175-250	1925	1957		Coarse, thin at bottom
<i>Quercus palustris</i> —pin oak	4	125-175	1937			The most attractive oak
<i>Quercus robur</i> —English oak	5	125-175	1895			Does not trim well
<i>Quercus rubra</i> —red oak	3	175-250	1925	1961	Base denuded	Coarse, good fall color
<i>Ribes alpinum</i> —alpine currant	2	100-125	1916			Best hardy, low hedge
<i>Ribes odoratum</i> —buffalo currant	2	125-175	1898	1915	Too open and ragged	Not a good hedge
<i>Rosa eglanteria</i> —sweetbrier	3	125-150	1890	1911	Unsuitable as hedge	Too open and vigorous
<i>Rosa multiflora</i> —Japanese rose	5b	150-200	1936	1944	Killed back each year	Good farm hedge where hardy
<i>Rosa rubrifolia</i> —redleaf rose	2b	125-150	1890	1911	Too open on sides	Attractive foliage color
<i>Rosa rugosa</i> —rugosa rose	3	100-125	1890	1911	Too open and irregular	Better as flowering hedge
<i>Salix acutifolia</i> —sharpleaf willow	2	175-250	1896	1915	Not attractive	Dull compared with other willows
<i>Salix alba</i> var. <i>chermesina</i> —redstem willow	3	175-250	1925	1960	Too much base	Good winter color, Morden, Man.
<i>Salix alba</i> var. <i>vitellina</i> —yellowstem willow	3	175-250	1898	1929	Too much dead wood	Good winter color
			1925			Good winter color
			1953	1960	Too much dead wood	Good winter color
<i>Salix elaeagnos</i> —rosemary willow	3	125-175	1898	1915	Too much dead wood	Silver gray foliage, attractive

<i>Salix matsudana</i> 'Tortuosa' —corkscrew willow	5	175-250	1965		Unusual twisted stems
<i>Salix pentandra</i> —laurel willow	1b	175-250	1903	1929	Good hedge on moist ground
			1938	1962	Rather thin on dry soil
			1965		
<i>Salix purpurea</i> —purple osier	2b	175-250	1925	1959	Good winter color
<i>Salix purpurea</i> 'Gracilis' —arctic willow	2b	100-125			Also called blueleaf willow
<i>Shepherdia argentea</i> —silver buffaloberry	1	100-125	1925	1978	Good silver gray color, Morden, Man.
<i>Sorbus americana</i> —American mountain ash	3	125-175	1898	1929	Unattractive like most trees with compound leaves
<i>Sorbus aucuparia</i> —rowan	3	125-175	1898	1929	Unattractive like most trees with compound leaves
<i>Spiraea</i> × <i>arguta</i> —garland spirea	3	125-150	1898	1929	Better as flowering hedge
			1930		
<i>Spiraea</i> × <i>bumalda</i> 'Froebeli' —pink spirea	2b	100-125	1966	1974	Flowering hedge with an open habit
<i>Spiraea chamaedryfolia</i> —germander spirea	3	100-125	1896	1929	Not good as hedge
<i>Spiraea douglasii</i> —Douglas spirea	5	60-100	1894	1913	Not good as hedge
<i>Spiraea nipponica</i> —Nippon spirea	5	100-125	1894	1913	Not good as hedge
<i>Spiraea</i> × <i>vanhouttei</i> —bridal wreath	4	125-150	1891	1929	Better as flowering hedge
			1965		
<i>Symphoricarpos albus</i> —snowberry	2	100-125	1890	1929	Better as fruiting hedge
<i>Syringa</i> × <i>chinensis</i> —Rouen lilac	2b	125-150	1890	1929	Better as flowering hedge
<i>Syringa josikaea</i> —Hungarian lilac	2	175-250	1891	1938	Excellent tall hedge
			1930		
<i>Syringa reticulata</i> —Japanese tree lilac	2	250-300	1911		Good hedge, a little coarse
<i>Syringa villosa</i> —late lilac	2	250-300	1911		Good but coarse
<i>Syringa vulgaris</i> —common lilac	2b	175-250	1890	1929	Mildews badly
<i>Tamarix ramosissima</i> —Amur tamarisk	3	125-150	1925	1977	Tips killed; a good soft texture

DECIDUOUS AND EVERGREEN TREES AND SHRUBS TESTED FOR USE AS TRIMMED HEDGES (Continued)

Plant	Zone of hardiness		Height (cm)	Planted	Removed	Reason for removal	Comments
<i>Tilia cordata</i> —littleleaf linden	3		175–250	1925 1965	1968	Base open	Better as “pleached” trees
<i>Ulmus americana</i> —American elm	3		175–250	1889	1911	Too vigorous and open	Fast-growing coarse hedge
<i>Ulmus procera</i> —English elm	6		175–250	1894	1911	Many dead plants	Not suitable
<i>Ulmus pumila</i> —Siberian elm	3b		175–250	1932	1956	Overgrown	Not good on moist land
<i>Viburnum lantana</i> —wayfaring tree	2b		250–300	1890 1945	1944 1977	Grew beyond bounds Too large	Excellent for shade Soft gray color
<i>Viburnum opulus</i> —European cranberry bush	2b		150–200	1894	1911	Too open and coarse	Good for shade
<i>Viburnum prunifolium</i> —black haw	4		100–200	1969			Striking fall color
<i>Viburnum trilobum</i> —high bush-cranberry	2		150–200	1925			Good for shade
<i>Weigela florida</i> —pink weigela	4		100–125	1896	1911	Too often damaged	Better as flowering hedge
<i>Weigela florida</i> ‘Variegata’—silverleaf weigela	6		60–100	1896	1911	Too often damaged	Not good as hedge
<i>Zanthoxylum americanum</i> —prickly-ash	4		250–300	1889	1951	Too large and old	Good thorny hedge
EVERGREEN HEDGES							
<i>Abies balsamea</i> —balsam fir	1		150–200	1897	1976	Very open at base	Irregular, good in shade
<i>Chamaecyparis pisifera</i> ‘Ericoides’—heath-leaved Sawara false cypress	4b		125–150	1896	1930	Killed back frequently	Not satisfactory
<i>Chamaecyparis pisifera</i> ‘Filifera’—threadleaf cypress	4b		175–250	1916			Fine texture
<i>Chamaecyparis thyoides</i> —Atlantic white cedar	2		150–175	1967	1974	Bad snow damage	A fast-growing evergreen

<i>Juniperus communis</i> 'Hibernica'—Irish juniper	6	175–250	1891	1911	Killed back constantly	Good where hardy, but poor color
<i>Juniperus communis</i> 'Suecica'—Swedish juniper	6	175–250	1897	1911	Killed back constantly	Good where hardy, but poor color
<i>Juniperus sabina</i> —Savin juniper	2	60–100	1897	1913	Too open habit	Not suitable
<i>Juniperus virginiana</i> —eastern red cedar	3	150–200	1913	1968	Very open	Variable color, fine texture
<i>Picea abies</i> —Norway spruce	2b	150–200	1889 1912	1911		Excellent, rapid-growing hedge
<i>Picea abies</i> 'Ohlendorffii'—Ohlendorff spruce	2b	60–100	1966			A slow-growing dwarf hedge
<i>Picea glauca</i> —white spruce	1	150–200	1889 1912	1931		Excellent
<i>Picea pungens</i> —Colorado spruce	2	175–250	1946			An excellent hedge at Morden, Man.
<i>Picea pungens</i> 'Koster'—Koster blue spruce	2	150–200	1914	1951	Trimmed badly in 1948	Excellent
<i>Pinus banksiana</i> —jack pine	1	150–200	1909	1929	Does not stand trimming	Thin open hedge
<i>Pinus cembra</i> —Swiss stone pine	2	150–200	1894			Excellent, fine texture
<i>Pinus mugo</i> —mountain pine	1	125–150	1916			White needle scale bad
<i>Pinus mugo</i> var. <i>mugo</i> —mugho pine	1	60–100	1965			Forms a wide dwarf hedge
<i>Pinus ponderosa</i> —ponderosa pine	2b	150–200	1895	1925	Too open	Does not trim well
<i>Pinus resinosa</i> —red pine	2b	150–200	1897	1960	Space needed	A bit open but very soft background
<i>Pinus strobus</i> —eastern white pine	2b	150–200	1890 1950	1951	Age, some blister rust	Excellent hedge
<i>Pinus sylvestris</i> —Scots pine	2	150–200	1895 1955	1925	Too open and thin	Fine texture
<i>Pseudotsuga menziesii</i> —Douglas fir	7b	150–200	1894			Poor color, grows fast
<i>Taxus cuspidata</i> —Japanese yew	4	100–175	1894			Very good hedge
<i>Thuja occidentalis</i> —arborvitae	3	150–200	1890 1911	1964	Thin at base	Excellent hedge
<i>Thuja occidentalis</i> 'Argentea'—variegated arborvitae	3	125–150	1899	1929	Space needed	Still in excellent shape
						Not so good as most

DECIDUOUS AND EVERGREEN TREES AND SHRUBS TESTED FOR USE AS TRIMMED HEDGES (Concluded)

Plant	Zone of hardi- ness	Height (cm)	Planted	Removed	Reason for removal	Comments
<i>Thuja occidentalis</i> 'Columbia'—silvertip arborvitae	3	150-200	1897	1929	Space needed	Excellent, light-tipped foliage
<i>Thuja occidentalis</i> 'Douglasii Aurea'—Douglas golden arborvitae	3	150-200	1894			Excellent golden color
<i>Thuja occidentalis</i> 'Elegantissima'—goldtipped arborvitae	3	125-150	1965			An upright selection
<i>Thuja occidentalis</i> 'Ellwangeriana'—Ellewanger's arborvitae	3	125-175	1899	1917	Badly sun scalded	Very finely divided foliage
<i>Thuja occidentalis</i> 'Globosa'—globe arborvitae	3	125-150	1895	1929	Space needed	Snow often injures it
<i>Thuja occidentalis</i> 'Hoveyi'—Hovey's arborvitae	3	125-150	1899	1917	Badly sun scalded	Attractive upright habit, damaged by snow
<i>Thuja occidentalis</i> 'Hoveyi Aurea'—Hovey's golden arborvitae	3	125-150	1897	1929	Space needed	Attractive upright habit, damaged by snow
<i>Thuja occidentalis</i> 'Robusta' ('Wareana')—Siberian cedar	3	150-200	1895 1930	1929	Space needed	Excellent hedge
<i>Tsuga canadensis</i> —Canadian hemlock	4	125-175	1889			Excellent hedge
BROAD-LEAVED EVERGREENS						
<i>Buxus microphylla</i> var. <i>koreana</i> —Korean littleleaf box	5	30-60	1946			Excellent low hedge
<i>Buxus sempervirens</i> —English box	7	60-100	1925			Good at Sidney, B.C.
<i>Ilex aquifolium</i> —English holly	7	175-250	1925			Good at Sidney, B.C.
<i>Lonicera nitida</i> —box honeysuckle	8	100-125	1925			Excellent shiny foliage at Sidney, B.C.

<i>Mahonia aquifolium</i> —Oregon-grape	5	30-60	1912	1930	Irregular and open	Not suitable as hedge
<i>Olearia</i> × <i>haastii</i> —New Zealand daisybush	8b	125-175	1925			Too open to be satisfactory at Sidney, B.C.
<i>Prunus laurocerasus</i> —cherry-laurel	7	100-125	1925			Attractive at Sidney, B.C.

Note: All *Berberis* (barberry) and *Rhamnus* (buckthorn) hedges have been removed and cannot be recommended because they are the alternate host of wheat rust fungus.

CONVERSION FACTORS

Metric units	Approximate conversion factors	Results in:
LINEAR		
millimetre (mm)	x 0.04	inch
centimetre (cm)	x 0.39	inch
metre (m)	x 3.28	feet
kilometre (km)	x 0.62	mile
AREA		
square centimetre (cm ²)	x 0.15	square inch
square metre (m ²)	x 1.2	square yard
square kilometre (km ²)	x 0.39	square mile
hectare (ha)	x 2.5	acres
VOLUME		
cubic centimetre (cm ³)	x 0.06	cubic inch
cubic metre (m ³)	x 35.31	cubic feet
	x 1.31	cubic yard
CAPACITY		
litre (L)	x 0.035	cubic feet
hectolitre (hL)	x 22	gallons
	x 2.5	bushels
WEIGHT		
gram (g)	x 0.04	oz avdp
kilogram (kg)	x 2.2	lb avdp
tonne (t)	x 1.1	short ton
AGRICULTURAL		
litres per hectare (L/ha)	x 0.089	gallons per acre
	x 0.357	quarts per acre
	x 0.71	pints per acre
millilitres per hectare (mL/ha)	x 0.014	fl. oz per acre
tonnes per hectare (t/ha)	x 0.45	tons per acre
kilograms per hectare (kg/ha)	x 0.89	lb per acre
grams per hectare (g/ha)	x 0.014	oz avdp per acre
plants per hectare (plants/ha)	x 0.405	plants per acre

